

ABSTRACT OF THE DISCLOSURE

An arrangement for a fluid distributor-contactor-type reactor uses perforated plates to circulate two reactants in alternate channels defined by spaces between parallel stacked plates to perform controlled distribution and mixing simultaneously with optional indirect heat transfer. One reactant enters one set of channels that serve as reaction channels. A set of second channels interleaved with the reaction channels serve as distribution channels that also provide a heat exchange function. Finely dispersed openings in the perforated plates distribute the reactant at low concentration from the distribution channels into the reaction channels. Dispersal of the reactant through the perforations will enhance the turbulence that is primarily introduced by the corrugated plates to insure good mixing of the reactants in the reaction channels. The pattern and size of the holes on the perforated plates may be varied as desired to disperse a carefully controlled amount of fluid across the plates over a large surface area. By maintaining a low addition rate of injected fluid reactant over the contact area, the concentration of the added reactant in the reaction channels may be kept as low as desired. The plates are preferably corrugated to introduce increased turbulence for promoting better distribution and dispersion of the fluids as one fluid is injected across the perforations. The corrugation angles can also be varied to suit the fluid flow properties of the fluid reactant and in particular varied over the height of the contacting zone to vary fluid residence time over different parts of the plates.